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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 223 and 224

[I.D. 111302C]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List Bocaccio as Threatened

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notification of petition finding and availability of a status review document.

SUMMARY: NMFS announces a 12-month finding on a petition to list the southern population of bocaccio (Sebastes paucispinis) as a threatened species and to designate critical habitat under the Endangered Species Act (ESA). Based on a review of the best scientific and commercial information on the status of the species, and on the recent actions adopted by the Pacific Fishery Management Council, NMFS finds that listing the southern population of bocaccio is not warranted at this time.

DATES: The finding announced in this document was made on November 14, 2002.

ADDRESSES: The bocaccio status review and accompanying stock assessment and rebuilding analysis are available electronically at the NMFS website at http://www.nmfs.noaa.gov. Paper copies of the status review and a list of references are available by submitting requests to Cathy Campbell, Protected Resources Division, NMFS, 501 W. Ocean Blvd., Suite 4200, Long Beach, CA 90802-4213. The status review, along with the accompanying stock assessment and rebuilding analysis, are the basis for the following discussions, except where other references are noted.

FOR FURTHER INFORMATION CONTACT: Cathy Campbell, NMFS, Southwest Region, Protected Resources Division, (562) 980-4060 or David O'Brien, NMFS Office of Protected Resources, 301-713-1401.

SUPPLEMENTARY INFORMATION:

Background

On January 30, 2001, NMFS received a petition from the Natural Resources Defense Council, Center for Biological Diversity, and Center for Marine Conservation (now known as The Ocean

Conservancy) to list the central/southern distinct population segment (DPS) of bocaccio (Sebastes paucispinis) or, in the alternative, to list bocaccio throughout its entire range as threatened under the ESA. The petition also requested that NMFS designate critical habitat for bocaccio. The petitioners contend that bocaccio have suffered precipitous population declines over the last several decades and that these population declines threaten bocaccio with extinction and compromise its ability to recover. The petitioners identified overutilization, specifically the direct and indirect harvest of bocaccio in groundfish fisheries, as the primary cause of bocaccio's decline. The petitioners identified other factors contributing to the status of bocaccio including inadequate regulatory mechanisms and habitat modification due to the effects of bottom trawling gear, pollution of nearshore juvenile habitat, and shifts in oceanographic conditions.

In reviewing the petition, NMFS also reviewed stock assessments, fishery independent and dependent data and other reports prepared prior to and from the time that bocaccio and other Pacific rockfish species came under Federal management. On June 14, 2001, NMFS published its determination (66 FR 32304) that the petition presented substantial scientific and commercial information indicating that listing may be warranted, and announced the initiation of a formal status review as required by section 4(b)(3)(A) of the ESA. To ensure a comprehensive review, NMFS concurrently solicited additional information and comment from the public on historical abundance, current abundance, factors contributing to population declines, sources of mortality, habitat use, habitat condition, factors affecting habitat condition, and distinctness of the southern population. In addition, NMFS solicited information regarding the adequacy of bocaccio conservation efforts and on areas that may qualify for critical habitat for bocaccio.

In response to the 90-day petition finding, NMFS received one public comment. The comment focused on the inadequacy of existing regulatory measures and, in particular, the underestimate of discards of bocaccio and the authorization of continued overfishing.

NMFS Southwest Fisheries Science Center staff prepared a comprehensive status review for the southern stock of bocaccio. This document summarizes the results of the status review. Copies of the status review are available on the internet or upon request (see ADDRESSES).

Life History

Bocaccio is a common rockfish, belonging to the genus Sebastes. Bocaccio are found in coastal waters of the Pacific Ocean, ranging from Baja California, Mexico to Alaska. Adults have been found at depths of 40-1578 ft. (12-481 m), but are most abundant at 165-825 ft. (50-251 m). Adults are often found in association with rocky areas. Larvae and small juveniles are pelagic and are commonly found in the upper 300 ft. (91 m) of the water column.

Bocaccio generally copulate in the late summer to early fall, and females bear their young live in the winter months. Off California, some bocaccio produce multiple broods in one season (Moser 1967). Larvae and early juveniles are pelagic until early June, when they move toward the shore and settle to the bottom where they develop as juveniles. Juvenile bocaccio (age 3 to 6 months) sometimes form dense schools in the nearshore area and are often found under drifting kelp mats.

Juvenile bocaccio grow rapidly, but typically take five years to mature. Based on the oldest fish that have been seen, bocaccio may live up to 40 years. The mean generation time (the average time required for offspring to replace the parents) is 12 years.

Bocaccio eat a variety of fish. Bocaccio are prey to larger organisms, including marine mammals, and juvenile bocaccio can at times provide a significant component of seabird diets.

Bocaccio recruitment (the addition of young fish to a population) is highly variable. Successful reproduction, where production of offspring offsets natural loss of adults, has occurred in only 26 percent of years. No large recruitments have occurred since 1978. Because of this highly variable recruitment pattern, abundance naturally fluctuates greatly.

Consideration as a "Species" Under the ESA

The ESA defines species as "any subspecies of fish or wildlife or plants and any distinct population segment of any species of vertebrate fish or wildlife that interbreeds when mature." This definition allows for the recognition of distinct population segments at levels below taxonomically recognized species or subspecies. On February 7, 1996, the U.S. Fish and Wildlife (FWS) and NMFS adopted a joint policy to clarify their interpretation of the phrase "distinct population segment (DPS)" for the purposes of listing, delisting, and reclassifying species under the ESA (61 FR 4722). The joint policy identifies two criteria that must be met for a population segment to be considered a DPS under the ESA: (1) The discreteness of the population segment in relation to the remainder of the

species (or subspecies) to which it belongs; and (2) the significance of the population segment to the species or subspecies to which it belongs.

Discreteness

According to the joint policy, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors; or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA.

Bocaccio are geographically separated into northern and southern populations divided by an area of scarcity off of Northern California and southern Oregon. Genetic analysis of the northern and southern populations indicates that there is a 90 percent probability that they are genetically distinct from each other. Thus, these segments can be considered discrete segments under the DPS policy.

The southern bocaccio segment extends into Mexican waters, where regulatory mechanisms differ from those in the United States. As a result, the Mexican portion of bocaccio's range could be considered discrete and, if also found to be "significant," it could be a DPS. However, as stated below, the Mexican population of bocaccio is not considered significant and therefore not a separate DPS, but a component of the southern DPS.

Significance

The DPS policy identifies several factors that may be considered in determining the significance of a discrete population segment to the taxon to which it belongs. These considerations include, but are not limited to: (1) persistence of the discrete population segment in an ecological setting unusual or unique for the taxon; (2) evidence that loss of the DPS would result in a significant gap in the range of a taxon; (3) evidence that the DPS represents the only surviving natural occurrence of a taxon; or (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

As noted above, genetic analysis indicates that there is a 90-percent probability that the northern and southern population segments are genetically distinct. In addition, the loss of either

population segment would result in a significant gap in the range of the taxon. As a result, both the northern and southern population segments would be considered significant under the DPS policy.

A rough estimate indicates that approximately 10 percent of total bocaccio abundance occurs in Mexican waters. Thus, despite the fact that regulatory mechanisms and bocaccio catches in Mexico could influence the conservation status of bocaccio in the United States, that influence is presumably small given the relative sizes of the stock segments. As a result, the portion of the southern bocaccio range in Mexican waters is not significant and is not considered a separate DPS, but a part of the southern population.

The northern and southern bocaccio population segments are both the discrete and significant as defined in the joint DPS policy. Thus, NMFS is recognizing a northern DPS and a southern DPS for bocaccio. This is consistent with the current NMFS and Council management of bocaccio, which recognize two separate West coast bocaccio populations. The remainder of this document will primarily address the southern stock as a DPS, since this was the subject of the petition.

Abundance

The current abundance of the southern bocaccio stock is estimated to be 3000 metric tons (mt) or approximately 1.6 million fish (of age 1 and older).

Spawning potential or output, which is the number of spawn that the population is capable of producing, is used as a measure of abundance for bocaccio. This measure accounts for both numerical abundance and the effects of age structure and maturation, where older individuals are disproportionally more fecund. The current spawning output of the stock is 720 billion eggs, and the estimated spawning output in the absence of fishing is 19,849 billion eggs (coefficient of variation (CV) of 31 percent). Thus, the current spawning output is 3.6 percent of the estimated unfished abundance.

The abundance of bocaccio naturally fluctuates greatly, due to rare, large recruitment events. Between 1951 and 1969, abundance fluctuated between 26 percent (in 1960-61) and 95 percent (1969) of the estimated average unfished level. Since 1969, there has been a gradual decline in abundance to its current level of 3.6 percent of estimated unfished abundance.

Fishery Management

Bocaccio have been an important component of commercial and recreational catches off

California for several decades. The estimated catch of bocaccio in 1950 was approximately 5000 mt. Landings of bocaccio in California gradually increased over the next 20 years, reaching a maximum annual harvest level of almost 12,000 mt in the mid-1970s.

In 1982, the Pacific Fishery Management Council (Council) completed its fishery management plan (FMP) for west coast groundfish, including bocaccio. The Council is one of eight regional fishery management councils established by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to prepare fishery management plans for U.S. fisheries in need of federal management. The Council's area of responsibility covers fisheries off California, Oregon, and Washington.

During the early 1980's, under the FMP, the allowable annual harvest of bocaccio was approximately 6,000 mt. After a 1990 bocaccio stock assessment showed a decline, NMFS established a harvest guideline of 1,100 mt for 1991-1992. During these two years, actual harvest exceeded the harvest guideline by 300-500 mt.

NMFS increased the allowable catch of bocaccio to 1,540 mt in 1992 and to 1,700 mt in 1995. Actual landings during the mid-1990's were significantly less than the allowable catch, however, with 864 mt and 599 mt harvested in 1995 and 1996 respectively. A 1996 stock assessment then indicated that bocaccio were in severe decline, which could account for the low harvests in 1995 and 1996.

Until the mid-1990s, NMFS believed that bocaccio were capable of withstanding an exploitation rate that was commonly applied in fisheries worldwide. This fishing rate of F(0.35; read as "F-35 percent") reduces the expected average lifetime reproductive output of a fish to 35 percent of the output it would achieve under natural unfished conditions. Recognizing that rockfish stocks were continuing to decline at this exploitation level, NMFS recommended the more conservative rockfish harvest policy of F(0.40) in 1998 and adopted an allowable catch of 230 mt for 1998 and 1999.

In 1999, the bocaccio resource was formally declared overfished by the Secretary of Commerce, in accordance with the Magnuson-Stevens Act. Following this declaration, NMFS adopted a rebuilding policy based on the 1999 stock assessment and a rebuilding analysis (MacCall, 1999). The rebuilding analysis indicated that rebuilding of bocaccio would take 37 years if the annual

harvest was limited to 100 mt. NMFS set the optimum yield (OY) at 100 mt for 2000-2002 and, in 2001, adopted a more conservative rockfish harvest policy of F(0.50). The actual levels of harvest in 2000 and 2001 exceeded the OY, with 233 mt taken in 2000 and 214 mt taken in 2001. In response to indications that the harvest levels for 2002 were nearing the OY level too early in the year, NMFS implemented additional fishery restrictions in July 2002 to minimize further 2002 catch of bocaccio.

A new 2002 stock assessment confirmed that the southern stock was in severe decline. The Council reviewed the accompanying rebuilding analysis at its September 2002 meeting and has proposed an even lower fishing rate which would allow a harvest of not more than 20 mt in 2003. Based on the rebuilding analysis, this harvest rate would provide an 80-percent probability that the stock would not decline in 100 years.

In establishing the harvest levels for 2002 and 2003, the Council incorporated new information available on the bycatch rates of bocaccio in the commercial trawl fishery. As a result of recent litigation, NMFS and the Council reviewed historic bycatch rates and discard assumptions and re-evaluated their approach to estimating discards in the trawl fishery. The result was a model developed by Hastie (Hastie, 2001) that estimates the co-occurrence rate of overfished groundfish species, including bocaccio, relative to the landings of key target groundfish species. Using this model, the Council was able to estimate the level of discards of bocaccio that can be expected for a given groundfish harvest in the trawl fishery. This model enables the Council to fully evaluate the impacts of management measures and protects against the adoption of management measures that may increase the level of bocaccio bycatch.

Summary of Factors Affecting the Species

The ESA defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under section 4(a)(1) of the ESA, a species can be determined to be endangered or threatened due to one or more of the following factors: (1) The present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing

regulatory mechanisms; or (5) other natural or manmade factors affecting its continued existence. Listing determinations are made solely on the best scientific and commercial data available, after conducting a review of the status of the species and taking into account efforts made by any state or nation to protect such species. These factors and their application to the southern stock of bocaccio are described below.

(1) The Present or Threatened Destruction , Modification, or Curtailment of Habitat or Range

Adult bocaccio are primarily found in rocky habitat. This habitat has likely been degraded by large commercial trawling operations, but there is little information regarding the level of habitat loss. Since this type of trawling has now been excluded from primary bocaccio habitat, it is expected that the future threats to rocky bottom habitat are minimal.

Little information is available on the habitat requirements of juvenile bocaccio. While kelp and eelgrass are utilized by larvae and juvenile bocaccio, there is no information to indicate that this habitat is critical to the survival of bocaccio or that any reduction in kelp or eelgrass has had a significant impact on bocaccio.

Bocaccio have not been observed to have any significant reduction in their range.

(2) Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Bocaccio have been overutilize for the last several decades. A combination of overutilization and poor recruitment have resulted in a severe decline of the southern bocaccio stock to 3.6 percent of their estimated pre-exploitation level.

Although historical overutilization has been the primary cause of bocaccio's decline, recent conservation measures have drastically reduced fishing effort in times and areas where bocaccio occur and are expected to allow the stock to recover. As a result, under new management measures, overutilization is not expected to place the bocaccio stock at risk of becoming endangered in the foreseeable future. See further discussion under "Conservation Factors" below.

(3) Disease or Predation

Bocaccio are prey to larger organisms, including marine mammals, and juvenile bocaccio can at times provide a significant component of seabird diets. This predation is not considered significant and is not likely to threaten the survival of the stock. There are no known threats of disease for bocaccio.

(4) The Inadequacy of Existing Regulatory Mechanisms

Previous fishery management measures have been inadequate to protect bocaccio, and the southern stock of bocaccio has been heavily overutilized during the entire period of Council management. However the Council has taken strict measures over the past few years to promote bocaccio recovery, and NMFS believes that the Council's most recent proposed measures, adopted in September 2002, will ensure that the southern stock of bocaccio will not become endangered within the foreseeable future. See further discussion under "Conservation Factors" below.

(5) Other Natural or Manmade Factors Affecting its Continued Existence

Long-term ocean climate patterns appear to have a strong influence on the frequency of large recruitments of southern bocaccio. The protracted and extremely warm ocean conditions of the 1990s was associated with poor reproduction of most rockfish species, including bocaccio, and undoubtedly contributed to the decline in abundance. Although this relationship cannot yet be quantified, the cooler ocean since 1998 is similar to the cool conditions of the 1960s and early 70s, and may be associated with better bocaccio recruitment. Although the specific impacts are uncertain, it is probable that ocean-climate patterns will continue to affect the recruitment of bocaccio.

Juvenile bocaccio have been documented in the intake of power plants along the California coast. In fact, power plant intakes have provided useful indices of rockfish recruitment. However, the level of mortality of juvenile bocaccio from power plant intake is very low and is not expected to impact the survival of bocaccio.

Conservation Factors

Previous fishery management measures have been inadequate to protect bocaccio, and the southern stock of bocaccio has been heavily overutilized during the entire period of Federal management. However, NMFS has adopted increasingly more restrictive measures over the past few years to promote bocaccio recovery, and NMFS believes that the Council's most recent proposed measures, adopted in September 2002, will ensure that the southern stock of bocaccio will not become endangered within the foreseeable future.

In 1999, the bocaccio resource was formally declared overfished. The 1999 NMFS bocaccio stock assessment and rebuilding analysis indicated a rebuilding time of 37 years, based on a harvest

rate of 100 mt per year. Based on this stock assessment, NMFS adopted a rebuilding policy in 2000 that set the catch at 100 mt for 2000-2002. This rebuilding policy was strongly influenced by the assumed strength of the 1999 yearclass, based on unusually high intake levels at certain power plants. The 100-mt harvest rate was a significant restriction from previous catch limits, which were as high as 1,700 mt in 1996. During the first 2 years of implementation of the 100 mt catch limit, the Council struggled to track catches on a real-time basis so it could recommend effective means to restrict the catch of bocaccio, which co-occur with many other species. This was not possible, however, and the catch limit of 100 mt was exceeded in both 2000 and 2001. In 2002, the Council closely monitored catch rates and recommended that NMFS implement mid-year closures and restrictions when the mid-year catch level indicated that the 100 mt limit was likely to be exceeded. As a result of NMFS mid-year actions in 2002, the bocaccio catch for 2002 will be near or below the 100 mt catch limit.

In June 2002, NMFS prepared a revised stock assessment that indicated that the 1999 stock assessment and accompanying rebuilding analysis were overly optimistic because the 1999 bocaccio yearclass was not as strong as initially estimated. This analysis showed that the stock continued to be in severe decline and indicated that more restrictive measures would be necessary to ensure both the survival and rebuilding of the southern stock of bocaccio. NMFS further refined this analysis and prepared a rebuilding analysis in August 2002, which modeled the probable outcomes for bocaccio at 25 and 100 years at varying levels of harvest. Based on this analysis, NMFS recommended to the Council that the annual harvest of bocaccio be reduced to as close to zero as possible, but not to exceed 20 mt.

Bocaccio Rebuilding Policy and Measures for 2003

At its September 2002 meeting, the Council considered the August rebuilding analysis and adopted a catch rate (catch/total biomass) which would allow a catch of up to 20 mt in 2003. Based on the rebuilding analysis, this catch rate would provide an 80 percent probability that the stock would not decline in 100 years. Under this rebuilding policy, allowable catch rates are very low. The catch rate for 2003 is 0.5 percent, compared with an average catch rate of 11 percent during the preceding 50 years. Under this rebuilding analysis, rebuilding is expected to take a median time of 170 years at this harvest level.

The Council recommended that NMFS implement several management measures for 2003 in order to limit the catch for 2003. The Council has proposed that all directed fishing for bocaccio be eliminated in 2003 and that the catch rate of 20 mt would be used to account for discards of bocaccio incidentally taken in fisheries for co-occurring species. The Council recommended new depth-based management measures that would prohibit bottom trawl, limited entry fixed gear, and open access fishing in the times and areas where bocaccio are expected to occur. In addition, the Council proposed that no retention of bocaccio be allowed in the commercial fisheries. In addition, recreational fisheries south of Cape Mendocino (40° 10' N.) would be closed from January through June and open shoreward of 20 fathoms from July though December.

The State of California has worked closely with the Council in developing measures to reduce bocaccio bycatch. In fact, the depth-based restrictions recently adopted by the Council were originally developed by the state. The state has recently adopted several conservation measures to provide additional protection for bocaccio. The state implemented regulations in 2002 that prohibit the retention of bocaccio in the recreational fishery. For 2003, the recreational season for all rockfish was reduced to six months and a new groundfish bag limit was created which will reduce the overall take of rockfish, including bocaccio. The state recently adopted a regulation that will require that observers be carried on California vessels, if requested by the State. The state recently adopted a network of reserves around the Channel Islands, which will provide protection for important bocaccio habitat. In addition, the Council has adopted a plan that, when implemented, will reduce the size of the nearshore fishery and is considering a number of options for significantly restricting or eliminating the spot prawn trawl fishery for 2003. Further, a rockfish closure intended to protect cowcod in a large area off southern California will also provide substantial protection for bocaccio.

With this combination of Federal and state management measures, the Council estimates that the bycatch of bocaccio (meaning the total harvest of bocaccio) in 2003 will be 10.3 mt. The Council plans to closely monitor harvest throughout 2003 and would implement additional mid-year management measures if necessary to ensure that the 20-mt harvest level is not exceeded. In order to evaluate the harvest levels of bocaccio in 2003, the Council will consider the results of the trawl bycatch model, information from the NMFS Marine Recreational Fisheries Statistical Survey

(MRFSS), and logbook and other data. Modifications being made in the MRFSS program are also expected to result in faster availability of higher quality data in recreational catches of bocaccio. In addition, in early 2003, the initial results from the NMFS Groundfish Observer Program will be available for NMFS and Council review. The observer program has monitored both the limited entry and open access components of the commercial groundfish fishery since August 2001. Preliminary results of the observer program will be available early in 2003 and will be used to further refine the Hastie bycatch model (Hastie 2001).

NMFS has prepared emergency regulations to implement the Federal management measures discussed above. These emergency regulations will be in effect by January 1, 2003, and will remain effective for 60 days. Concurrently, NMFS will be issuing a proposed rule to implement these measures for the remainder of 2003 and soliciting public comment on these measures.

Future Harvest Levels

The Council's current rebuilding policy is based on the 2000 rebuilding analysis which indicated that it will take 170 years to rebuild the bocaccio stock, with the recently adopted catch rate (which is 20 mt for 2003). According to the National Standard Guidelines (Guidelines), NMFS' regulations that implement the Magnuson-Stevens Act, the maximum length of time to rebuild an overfished species is the time to rebuild in the absence of fishing, plus one generation time. For bocaccio, the maximum time to rebuild is 106 years. Therefore, the Council must adopt a rebuilding plan that will have at least a 50-percent probability of rebuilding bocaccio within 106 years. Given the current abundance of bocaccio, and their natural tendency for rare, large recruitment events, analyses indicate that, even in the absence of fishing, the southern stock of bocaccio would not have a 50-percent probability of recovering within 106 years. Since the Guidelines do not address the unique situation in which rebuilding a species in the maximum time allowed is not possible, NMFS reviewed the Magnuson-Stevens Act and has determined that the Council's recommended level of bocaccio harvest (20 mt) meets its standards for rebuilding overfished stocks. Although the Council has not yet adopted a revised rebuilding plan for bocaccio, NMFS expects that the rebuilding plan will maintain the catch rate adopted for 2003, since this would be necessary in order to meet the rebuilding requirements under the MSA given bocaccio's current status.

Determination

After reviewing the best scientific and commercial information available and considering the expected effects of conservation measures, NMFS has determined that listing the southern DPS of bocaccio is not warranted at this time. While NMFS recognizes that the southern stock of bocaccio has severely declined over the past several decades, NMFS believes that the catch rate of 0.5 percent (20 mt in 2003) recently adopted by the Council will prevent bocaccio from becoming endangered within the foreseeable future. NMFS will retain bocaccio on the Candidate Species list and closely monitor the status of the bocaccio population and future Council measures. If necessary, NMFS will re-evaluate its decision regarding whether the southern stock of bocaccio warrants listing under the ESA, including evaluating whether emergency listing is warranted and whether an additional status review is necessary. Reasons for a re-evaluation include, but are not limited to: (1) if future Council decisions allow for increased exploitation rate; or (2) if future data or analysis indicate that conservation efforts are inadequate.

References

A list of references is available upon request (see ADDRESSES).

Authority

The authority for this section is the ESA of 1973, as amended (16 U.S.C. 1531 et seq.).

Dated:

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Rebecca Lent

Deputy Assistant Administrator for Regulatory Programs

National Marine Fisheries Service